EPEAT and Life Cycle Thinking

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What I'll Cover

- History of EPA's EPP Program

- Brief introduction to EPEAT

- How Life Cycle Thinking is integrated into IEEE 1680 family of standards

- How feds are managing the life cycle impacts of their electronics

EPA's EPP Program

- Established 1992 via EO 12873
- Job: to help feds buy environmentally preferable products and services
- Created EPP guidance for federal purchasers
- "Environmentally preferable" means "products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance or disposal of the product or service."
- Conducted Pilot projects with federal agencies
- Initiate and participate in development of voluntary environmental performance standards for products and services feds procure

Electronic Products Environmental Assessment Tool

An environmental procurement tool designed to help institutional purchasers and consumers evaluate, compare and select desktop computers, laptops and displays based on their environmental attributes.

Two Dimensions of EPEAT

- IEEE 1680 family of American National Standards
  - 1680 umbrella standard – the rules of the game
  - 1680.1 environmental criteria for computers & displays
  - 1680.2 environmental criteria for imaging equipment (under development)
  - 1680.3 environmental criteria for TVs (under development)

- System for identifying and verifying product claims
  - EPEAT Registry at www.epeat.net
 - Self-declaration with after-market verification

Basic Features of IEEE 1680 and EPEAT®

- <u>Voluntary</u> participation
- Market recognition for qualified products
- <u>Life cycle</u> environmental attributes
- Easy to use tool for purchasers
- <u>Builds</u> on U.S. & international requirements and standards
  - E.g., Energy Star®, RoHS, ECMA, Blue Angel
- "Trust but Verify" - <u>Self-declaration</u> with after-market <u>verification</u>
  - Eliminates delay in time to market
- Scalable to other products
- Environmental Benefits Calculator to assess benefits from purchasing EPEAT-registered products

Why Need for Life Cycle Thinking in Green Purchasing?

- Single attribute programs can't cover all the key environmental impacts of a product, or may shift impacts to other areas

- Looking at only one stage of the life cycle of a product makes us miss key impacts

- Creating multiple attribute, life cycle focused environmental performance criteria for products and services makes it easier to buy and sell greener products

Electronics Lifecycle
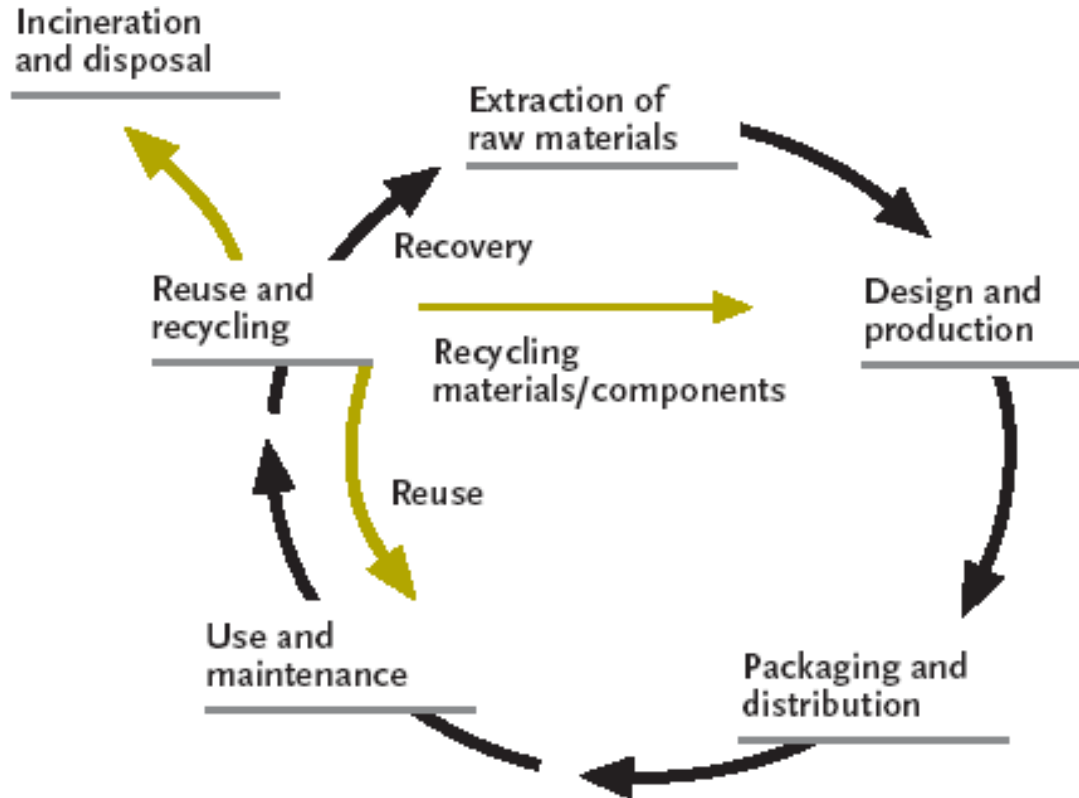
Source: University of Cambridge, Green Procurement Guide: Guidance on Environmental Aspects of Purchasing (http://www.admin.cam.ac.uk/offices/environment/guidance/purchase.html)

Life Cycle Thinking and IEEE Standards Development

- Collect existing environmental performance criteria and LCA research related to product

- Determine hotspots of concern based on assessment of this data, input from stakeholders

- Create environmental performance criteria for these hotspots

- Revise standards as needed – minimum every 5 years – informed by new data and research

Life Cycle Thinking and IEEE Standards Development

- IEEE 1680 family of standards are very strongly built on LCT
- Criteria fundamentally derive from stakeholder knowledge and judgement, which include LCA learnings, but not based on LCA directly
- The purpose of LCA, as all science, is to inform human judgement
- 1680 also built on many other key disciplines such as toxicity and risk assessment, material flow analysis, resource conservation analysis, etc.
- A standard based solely on LCA would be limited in scope due to limited state of LCA science today, would miss key information from other scientific tools, and would not incorporate stakeholder values

IEEE 1680.1 Environmental Criteria

Performance Category	Example	Required	Optional
Product-Specific Criteria			
Environmentally Sensitive Materials	RoHS & beyond	3	8
Material Selection	Recycled content	3	3
Design for End-of-life	Ease of recycling	6	5
Product Longevity/Lifecycle Extension	Warranties, spare parts	2	2
Energy Conservation	ENERGY STAR & beyond	1	3
Packaging	Recyclable, recycled content	3	4
Corporate Criteria			
End-of-life Management	Take-back and recycling	2	1
Corporate Performance	EMS, environmental policy, report	3	2
Overall Total Number of Criteria		**23**	**28**

1680 Life Cycle Stages Addressed

Extraction of Raw Materials/Mining
- Design for End of Life criteria
- End of Life management criteria

Design and Production
- Energy Conservation criteria
- Materials Selection criteria
- Environmentally Sensitive Materials criteria
- Design for End of Life Criteria

Packaging and Distribution
- Packaging criteria

Use and Maintenance
- Product Longevity/Life Cycle Extension criteria
- Energy Conservation criteria
- Indoor Air criteria

Reuse and Recycling
- End of Life Management criteria
- Consumables criteria

Disposal
- End of Life Management criteria (product, packaging, batteries, consumables)
- Design for end of life criteria

Other
- Corporate Performance, Consumables criteria

Key Lessons Learned So Far

- Rely on key stakeholders at table to bring most current data to inform standard development

- Work with what we know now

- Encourage research on what we'd like to know for future revisions

- Iterative process is key since we are always learning

EPEAT Research Strategy

- Working with stakeholders to refine list of research needs

- Determining current research which will answer some of these questions

- Collaborating with EPA's Office of Research and Development and others to create strategy for conducting key research

The Federal Electronics Lifecycle: Purchasing

- The Federal Government spent almost $73 billion on IT products and services in FY2009

- The Federal Government purchases or leases approximately 2 million computers and monitors each year

E.O. 13514
Electronics Stewardship Purchasing Goals

- Section 2(i), each agency shall "promote electronics stewardship, in particular by"
  - (i) ensuring procurement preference for EPEAT registered electronic products
  - (iv) ensuring the procurement of Energy Star and FEMP designated electronic equipment

Electronic Product Environmental Assessment Tool (EPEAT)

- EPEAT discussed in previous slides

- Acquisition of EPEAT registered equipment is also required by the Federal Acquisition Regulation (FAR) Part 23

ENERGY STAR®

- ENERGY STAR defines specifications for energy efficient products and buildings, and provides information for energy efficient practices

- ENERGY STAR sets energy efficiency specifications for 60+ product categories

- EPEAT registered products meet ENERGY STAR specifications

- Acquisition of ENERGY STAR qualified products is also required by EISA 2007, EPAct 2005, and the FAR Part 23

Federal Energy Management Program (FEMP)

- FEMP facilitates the federal government's energy management and investment practices
- FEMP defines purchasing specifications and performance requirements for specific products
  - Energy efficiency and low stand-by power
- ENERGY STAR qualified products usually meet the FEMP specifications
- Acquisition of FEMP designated products is also required by EISA 2007, EPAct 2005, and the FAR Part 23

The Federal Electronics Lifecycle: Use

- The Federal Government has approximately 3.7 million computers in use

- Office equipment consumes 7% of all the electricity used in commercial buildings

- Office equipment wastes significant energy by sitting idle in an "active" mode

E.O. 13514
## Electronics Stewardship Use Goals

- Section 2(i), each agency shall "promote electronics stewardship, in particular by"
  - (ii) establishing and implementing policies to enable power management, duplex printing, and other energy-efficient or environmentally preferable features on all eligible agency electronic products

Power Management

- Utilization of ENERGY STAR features on ENERGY STAR qualified electronics, in order to save electricity

- Places monitors and computers into a low-power "sleep mode" after a period of inactivity

- Keyboard or mouse activity "wakes" computers and monitors

- Must be "enabled" on computer and monitors to ensure power savings

- Software solutions assist in enabling computers and monitors

Duplexing

- Utilization of double-sided printing features on imaging equipment
  - Printers, copiers, fax machines, multi-function devices
- Duplexing must be set on both imaging equipment and computers that send jobs to imaging equipment
- Software solutions assist in enabling computers and imaging equipment
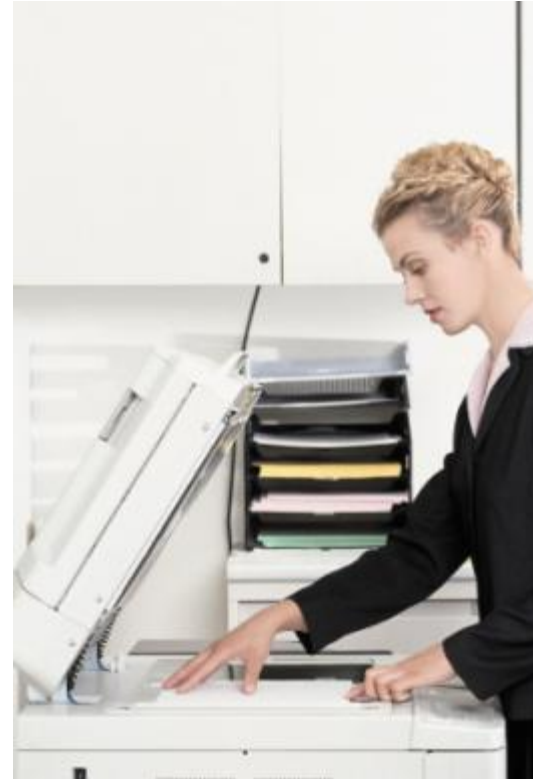
Extending the Life of Equipment

- Equipment hardware and software can be maintained to extend the life of equipment

- Specific components can be upgraded to keep equipment is service for a user or organization

- Bring users in on taking care of the electronics they use

The Federal Electronics Lifecycle: End-of-life

- The Federal Government handles approximately 1.1 million computers and monitors at the end of life each year
  - 44% reused, 39% recycled
- Certain types of electronic equipment contain materials such as lead, mercury, and other toxic constituents
- Potential adverse effects on human health and the environment if improperly managed

E.O. 13514
Electronics Stewardship End-of-Life Goals

- Section 2(i), each agency shall "promote electronics stewardship, in particular by"
  - (iii) employing environmentally sound practices with respect to the agency's disposition of all agency excess or surplus electronic products

Reuse

- Internal reuse and redeployment

- Excess equipment
  - Donation schools and eligible educational nonprofits
  - Transfer to another federal entity

- Surplus equipment
  - Donation to State and eligible nonprofits

Recycling

- Declare property for abandonment and destruction
- Select an environmentally responsible recycler
  - Recycler certified under the Responsible Recycling (R2) Practices or e-Stewards Standard
  - Recycler that has undergone an on-site review by a federal entity

Contacts and Resources

- Holly Elwood
  U.S. EPA Environmentally Preferable Purchasing Program
  Co-Chair of IEEE Environmental Assessment Sponsor Committee
  Elwood.Holly@epa.gov

- EPEAT Product Registry
  www.epeat.net

- IEEE Standards Development
  www.epeatdevelopment.net

- FEC Website
  www.federalelectronicschallenge.net